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Contract NA-ONR-397, T.O. III, NR 170-345

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- - - - -Final Report- - - - -

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Work was begun on this project on October 1, 1947, and continued until August 31, 1952, the closing date of the contract. The first year of the contract was spent in investigations on the topic, "Methods of Identification of Persons Unavailable for Military Service". The primary problem was the identification of malingering on personality tests. One study (1) indicated that the psychogalvanic response was of little value in the assessment of malingering on personality test items. Another study (2) was concerned with the development of a key for the Minnesota Multiphasic Personality Inventory. This key was designed after both positive and negative malingering had been experimentally produced and severed successfully to identify most of the experimentally malingered MMPI records. The key has been used with some success by other investigators and is a tangible product of possible value in Naval Selection.

The second part and major part of the contract period has been devoted to theoretical and general problems in relation to verbal behavior (4). Studies have been made of certain aspects of verbal behavior itself and of its relationship to certain other psychological processes.

1. Verbal Behavior and Reasoning.

Ten experimental studies were made of the effects of experimentally increased associative strength on solutions to reasoning problems (Maier's two-string and hat-rack problems). Three of the four studies (5,12) produced positive results. Three studies (8,16) were concerned with the effect of old associations on problem solutions, and two of them produced significant evidence that old associations influence problem solution. Two other studies (3,7) indicated that the order of words in which a problem was stated has a significant influence on the kind of solution appearing most frequently. One (unreported) attempted to determine whether word order would have effects upon recall. Methodological difficulties made the suggestive evidence impossible to interpret.

Some of the evidence accumulated in these investigations shows very clearly that associative processes are important in reasoning and further that the nature of the associative process is of great importance. The results indicate that the nature of the associative process is of great importance in reasoning. The results indicate that the nature of the associative process is of great importance in reasoning. The results indicate that the nature of the associative process is of great importance in reasoning.

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2. Avoidance of Certain Thoughts.

An exploratory study was made of the Dollard and Miller hypothesis that if stopping thinking of something reduces anxiety then stopping thinking of that topic will be learned. The study (18) yielded equivocal results.

3. Verbal Behavior and Attitudes.

A theory of attitudes predicated on the verbal response as a mediating agency in attitudinal behavior was partially developed. In accordance with this theory, a word association technique for the measurement of attitudes was established. It was successfully used in the measurement of certain Allport-Vernon values (9) and of radicalism-conservatism (17). An attempt to measure authoritarianism-equalitarianism failed, probably because the criterion scale (the California F-scale) is unsatisfactory (17). An unreported attempt was made to measure experimentally induced need-achievement with this technique, but the results were inconclusive.

In accordance with the theory of attitudinal behavior a study (10) was conducted which showed the influence of attitudes on learning. Attempts to show effects of attitude on incidental learning and perception (11) produced equivocal results, probably because of methodological deficiencies. Another study (14) was performed to study the influence of verbal habits on personality trait ratings. The study showed that verbal habits, operating alone, could influence personality ratings. The word association technique mentioned above, offers some promise as a simple, reliable and valid means of assessing attitudes.

3. Studies of Verbal Behavior.

Several investigations were made of certain aspects of verbal behavior, especially the free association process. One study showed that the associative output to stimulus words was related to the frequency with which the stimulus words are used in the English language (13). Another study (21) showed that associative output was greater for attitude-related words than for stimulus words unrelated to attitude. A third study (15) showed suggestive evidence that habit strength is an important variable in determining the recallability of words and the order in which words are recalled in a simulated free association situation. One more investigation (20) suggested that the recall of verbal material was enhanced by spaced recall trials.

A last study (19) in this area showed that expected changes in associative reaction times, predicted from a theory of the process and organization of verbal behavior, did not occur.

These studies all have relevance to the developing interest in verbal behavior, currently associated with communication or information theory. They offer some sufficient support for and, on the other hand, some evidence negative for current theorizing in this area.

One other study in the area of verbal behavior examined the utility of the distress-relief quotient as a means of evaluating therapeutic progress (3). Positive results were obtained.

Twenty-six studies have been summarized in the foregoing paragraphs and in the 21 technical reports produced in this project (see appended list). Despite the large number of studies carried out it can be said in conclusion, that several times this number of investigations must be performed before firm answers to any of the problems studied can be established.

QNR Reports Prepared

- #1. Cofer, C.N., Judson, A. J., & Weick, D.V. On the significance of the psychogalvanic response as an indicator of reaction to personality test items. J. Psychol., 1949, 27, 347-354.
- #2. Cofer, C.N., Chance, J., & Judson, A.J. A study of malingering on the Minnesota Multiphasic Personality Inventory. J. Psychol., 1949, 27, 491-499.
- #3. Cofer, C.N., & Chance, J. The Discomfort-relief quotient in published cases of counseling and psychotherapy. J. Psychol., 1950, 29, 219-244.
- #4. Cofer, C.N., Verbal behavior in relation to reasoning, perception and learning: Introductory statement.
- #5. Judson, A.J., and Cofer, C.N. The role of increased associative strength in reasoning.
- #6. Judson, A.J., and Cofer, C.N. An experimental analysis of the role of direction in a simple verbal problem.
- #7. Judson, A.J., and Cofer, C.N. A further analysis of direction in a simple verbal problem.
- #8. Judson, A.J., and Cofer, C. N. The effect of a reinforced response in a simple verbal problem.
- #9. Judson, A.J., & Cofer, C.N. Measurement of attitudes by a simple word association technique.
- #10. Judson, A.J., & Cofer, C.N. Effect of attitudes on learning.
- #11. Judson, A.J., & Cofer, C.N. Attitude in relation to perception and incidental learning.

- #12. Cofer, C.N. and Gelfand, S. The role of increased associative strength in reasoning: Further report.
- #13. Cofer, C.N., and Shevitz, R. Word association as a function of the Thorndike-Lorge frequency of the stimulus words. This report was published as "Word Association as a function of word frequency", Amer. J. Psychol., 1952, 65, 75-79.
- #14. Cofer, C.N., and Dunn, J.T. Personality ratings as influenced by verbal stimuli. This report will be published in 1953 in J. Personal.
- #15. Cofer, C.N. A study of "habit strength" in relation to clustering in free association.
- #16. Cofer, C.N. Another investigation of associative factors in reasoning.
- #17. Cofer, C.N., and Nerdie, P.J. Further studies of attitude measurement by a word association technique.
- #18. Cofer, C.N., and Coonan, T.J. Inhibition of thought categories under stress: an Exploratory study.
- #19. Cofer, C.N., and Ford, T.J. Mediated generalization among synonyms.
- #20. Cofer, C.N. Influence of one recall upon subsequent recalls of incompletely learned material.
- #21. Cofer, C.N., and Shevitz, R. Free association and attitude.

Others Publications Related to the Contract

- Cofer, C.N. Verbal behavior in relation to reasoning and values. Pp. 206-217 in Guetzkow, H. (ed.), Groups, Leadership and Men. Pittsburgh: Carnegie Press, 1951.
- Cofer, C.N. Malingerings on Personality Tests. Research Reviews, 1949, May pp. 18-20.

Thesis Prepared Under the Contract (all on file,
University of Maryland Library)

- Jackson, A.J. Associative Factors in Problem Solving, 1950 (Ph.D.)
- Havron, M.D. Verbal Behavior and Attitudes, 1950 (Ph.D.)
- Ford, T.G. Mediated generalization among synonyms along a gradient of similarity in meaning, 1952 (M.A.)
- Shevitz, R. An investigation of three variables affecting response availability, 1952 (M.A.)
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